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Carbon Tetrachloride Poisoning

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Of the two documents now issued for the use of sanitary authorities the memorandum is much the more important for practical purposes. It states briefly and clearly the life-history of the bed-bug, tells of the indications of the presence of bed-bugs, and suggests where bed-bugs should be looked for when a dwelling is being inspected. This information is likely to prove extremely useful to the sanitary officer in connexion with both housing conditions and the management of housing estates owned by local authorities. The memorandum goes on to give the sources of infestation and the methods for prevention of infestation and for extermination. With regard to this last matter—namely, prevention—neither the report nor the memorandum adds much to what has already been so well said by Dr. Gunn in the treatise to which reference has already been made. The important point is that after all it is the housewife who must clean her house with care and regularity. There is no agent more effective in ridding a house of bed-bugs than the diligent application of soap and water, to which a little washing soda has been added. A disinfectant such as cyllin may be used with perhaps some advantage, but not in place of soap and water. Help should be given to tenants so that they may know the harbourages of bed-bugs—for example, behind pictures and picture rails, architraves, skirting boards, window mouldings, in cracks in plasterwork, in old articles of furniture, behind loose paper on walls, and where the upholstery meets the actual woodwork of furniture. Bugs are also found on bed mattresses and bedding, especially around the leather button of the mattress. All these special sites should be known to the sanitary officer, who should assist the tenant with his advice on how to get rid of them. Various contact insecticides are mentioned by the expert committee, but it is frankly stated that the relative effectiveness of these insecticides cannot yet be assessed from a practical point of view. With regard to fumigation, all that is known is that prussic acid gas, in a concentration of about 2 per cent. by volume with an exposure of three hours, will usually penetrate all ordinary types of hiding-place and kill bed-bugs and their eggs. Fumigation by this gas may be carried out in the homes, or the furniture may be similarly fumigated in specially devised vans. In both cases, however, there are grave dangers, and the use of prussic acid gas, except under the close direction and supervision of specially trained workers, should not be undertaken. Special measures, too, require to be adopted to free articles of furniture and particularly bedding of this poisonous gas after fumigation.

The memorandum also deals with the removal of tenants to new premises, and emphasizes that before the move takes place a thorough and not a cursory inspection of the old house and furniture should be made. Infested furniture should on no account be removed to the new house, and if such furniture cannot be destroyed its thorough disinfestation must be accomplished before it is used in the new home. The memorandum winds up on the keynote which is dominant throughout—namely, that to prevent infestation or re-infestation the inculcation of habits of cleanliness among the tenants should be the primary object of the sanitary officer and property manager.

CARBON TETRACHLORIDE POISONING

Advances in industrial chemistry have led to the introduction into the domestic and the commercial worlds of a wide variety of organic chemicals, and some such innovations have not been free from dangers to health. Carbon tetrachloride is a case in point. As a liquid it is a non-inflammable fat solvent. It forms a heavy and non-inflammable gas, and hence is a valuable fire extinguisher; it is also employed very extensively as an anthelmintic for hookworm. The use of carbon tetrachloride for dry shampooing quickly provided proof of its toxic properties, for in England a case of poisoning occurred in 1907 and a death in 1909. This fatality led to the abandonment of carbon tetrachloride for shampooing in this country, but a recent report¹ contains an account of a case of poisoning from this cause in Denmark as lately as 1932. Such a risk can, however, be easily avoided, for there are alternative and safer solvents for dry shampooing, and hence carbon tetrachloride should not be allowed for this purpose. As an anthelmintic it has produced a large number of fatalities, but unfortunately there is no efficient cure for hookworm that is absolutely safe. The relative merits of remedies for ankylostomiasis are a matter of dispute. Carbon tetrachloride has become the drug of choice in many countries, but some authorities state that it should not be prescribed on account of its toxicity. For example, Clayton Lane² speaks of its administration in the treatment of hookworm infestation as "a blindfold gamble with death," and considers "the use of the drug inadmissible in the present dosage even for the individually attended patient." Incidentally, the medicinal employment of carbon tetrachloride has added much to our knowledge about its poisonous actions. Specimens contaminated with carbon bisulphide are extremely toxic, but even in the purest form it can give rise to toxic effects. Experiments on dogs have shown that it can readily produce liver degeneration, but that a considerable degree of protection can be afforded to the liver by an adequate supply of calcium. The industrial dangers of carbon tetrachloride have been recently reviewed by Möller.³ In particular he discusses the use of this drug for industrial and domestic dry cleaning, in connexion with which a number of cases of poisoning have been reported. On the other hand, it is non-inflammable, and the number of deaths from burning due to benzene must be far greater than the fatalities for which carbon tetrachloride is responsible. Möller concludes that carbon tetrachloride is, on balance, probably safer than benzene, provided that the public are instructed that it forms a heavy and toxic gas, and that great care in ventilation must be taken after it has been used. As a fire extinguisher it has been found invaluable in electric plants on account of its non-conductivity, and, in the case of petrol fires, because its heavy fumes blanket the fire. But even when employed for this purpose it is not without its dangers, and three cases of poisoning have been recently reported by Sir William Willcox,³ and another one in Paris.⁴ In these instances the outstanding feature was

¹ *Journ. Indust. Hygiene*, 1933, xv, 418.

² *Hookworm Infection*, Oxford University Press, 1932, p. 229.

³ *British Medical Journal*, January 20th, 1934, p. 105.

⁴ Gautier, Chatron, and Seidmann: *Bull. et Mém. Soc. Méd. des Hôp. de Paris*, 1933, No. 34, 1638.

impairment of kidney function. Möller points out an additional risk attending the use of carbon tetrachloride in fires—namely, the possibility of partial oxidation of the drug, with the formation of phosgene. Petrol fires are so dangerous and they are so difficult to put out that it is scarcely justifiable to condemn an efficient extinguisher because of its toxic properties. Every effort should be made, however, to educate the public to the risks associated with carbon tetrachloride. The peculiar danger is that the heaviness of the fumes, which makes the compound such a good fire extinguisher, also makes the fumes difficult to remove, and very thorough ventilation is necessary before it is safe to enter a room in which carbon tetrachloride has been liberated in quantity.

EXPERIMENTAL CORNEAL GRAFTING

The work of Mr. Tudor Thomas in corneal grafting is well known. His latest contribution¹ deals with improvements in the technique of experimental grafting in rabbits, an investigation into the causes of opacification in grafts, and a new method of examination of the anterior chamber in cases with general corneal opacities precluding direct observation. It seems quite clear that at present heterogeneous grafts cannot be successfully used, since an opacity which never clears always forms in the alien tissue. This is very unfortunate, as it is a matter of practical experience that, human donors being all too few, a careful selection of recipients has to be made, and borderline cases, where the results are uncertain, have to be denied the possibility of improved vision. An adhesion of the iris to the back of the graft results in formation of an opacity, and, by eliminating the danger of anterior synechiae in experimental animals, the solution of the similar problem in human eyes is one step nearer. Details of the best form of corneal needle to give accurate suturing and to avoid perforation of the anterior chamber, together with the easiest way of threading eyeless needles, have now been satisfactorily worked out. The new method of examination of the position and size of the pupil and the depth of the anterior chamber, where the cornea is opaque, by simultaneous and successive transillumination of the globe from two directions, greatly assists in the prognosis and selection of cases. It enables the operator so to place his graft that it lies over the pupil in a position of maximum efficiency. Previously in a very opaque cornea it was sometimes discovered towards the end of the operation that the graft would be eccentric to the pupil, and that a portion of the graft would be useless unless an iridectomy were performed later. This method of examination can also be used to determine the effect of mydriatics and miotics on the pupil. It has the added advantage of being easily applied to a patient on the operating table. The operation at present can hardly be performed with success by anyone who has not had practice on animals, but, by continued experiment, the ingenuity of Mr. Tudor Thomas will be able so to simplify the technique that a more universal practice of grafting will be possible. Mr. Thomas's paper allows a glimpse of the great amount of investigation and experimentation that has led, during some

years past, to the evolution of the operation. It is estimated that in animals useful vision is obtained in 75 per cent. of cases. No figures of the results obtained in man are given, but, even if they fall far short of this high percentage, the operation, which had in the past been abandoned as useless, marks a notable achievement in ophthalmic surgery.

SIX DUBLIN DOCTORS

As a result of the cholera epidemics which worked such havoc in Ireland the hospital of Saint Vincent de Paul was opened in Dublin in 1834. In the recent "Record of the St. Vincent's Hospital Centenary," Mr. William Doolin, surgeon to the hospital and editor of the *Irish Journal of Medical Science*, has given, under the title of "The Forerunners," sketches, remarkable for their interest, of the early members of the staff. The first, and for some time the only, medical officer was a surgeon, Joseph Michael O'Ferrall (?1790–1868), who spelt his name at different times in other ways—Farrell and Ferrill—and is said to have preferred it to be pronounced "O-ver-all" as an expression of universal superiority. He was poor and of humble origin, raised by his own exertions, a stern, thrifty, and egotistic character, who wrote 109 papers; as his sight failed he successfully cultivated the *tactus eruditus*, and when from paraplegia he had to be wheeled into the wards still continued his clinical teaching. As the hospital grew it became necessary that he should have a colleague, and this again was a surgeon, O'Bryen Bellingham (1805–57), and it would be difficult to find a greater contrast than that between these two. Bellingham came of an ancient family dating from the Conquest, and taking its name from Bellingham-in-Tyndale in Northumberland; a Sir Edward Bellingham was Lord Deputy of Ireland in 1548, and O'Bryen was born at Castlebellingham, County Louth, as the son of Sir Alan Bellingham. He took the degree of M.D. at Edinburgh, and with his social advantages rapidly gained practice in Dublin, was a member of "Our Club," or "The Rough and Readys," was a gentle aristocrat, courteous to all, professor of botany and librarian at the College of Surgeons, famous for his method of curing aneurysm by manual compression, and the exhibitor of so many specimens of this lesion before the Pathological Society that it came to be known, among the physicians, as "The Aneurysmal Society." He wrote an excellent work on *Diseases of the Heart*, which contained a very good account of exophthalmic goitre, but he did not live to read the laudatory notices it evoked. Edward Mapother (1835–1908), the only one of the six included in the *Dictionary of National Biography*, taught Alexander Macalister and many others their anatomy, held the chairs of hygiene and of anatomy and physiology, was the first medical officer of health for Dublin, and president of the Statistical Society, evidence of rare versatility, before he removed to London and became a dermatologist. The fourth appointment to St. Vincent's Hospital was that of Robert Cryan, a wealthy and shy personality, and the first "pure physician" in Dublin; another physician, also well endowed with this world's goods, was T. B. Quinlan, a hospitable, scholarly man, of sunny disposition,

¹ *Brit. Journ. Ophthalm.*, March, 1934, p. 129.